AMENDMENTS TO THE CLAIMS

48. (Currently Amended) A multi-cavity thin-film interference filter comprising a sequence of alternating layers of amorphous silicon and a dielectric material deposited one on top of the other to form a tunable bandpass filter, said dielectric material being selected from the group consisting of silicon dioxide and silicon nitride, said sequence of alternating layers forming coupled Fabry-Perot cavity structures including at least a first Fabry-Perot cavity structure and a second Fabry-Perot cavity structure, each of said first and second Fabry-Perot cavity structures comprising:

a first multi-layer thin film interference structure forming a first mirror;

a thin-film spacer layer deposited on a top surface of the first multi-layer thin-film interference structure, said thin-film spacer layer made of said amorphous silicon; ~~and~~

a second multi-layer thin film interference structure deposited on a top surface of the thin-film spacer layer and forming a second mirror; and

a layer of electrically conductive material to which, during use, power is supplied by an external source to change the temperature of the multi-cavity thin film interference filter and thereby shift the passband of the multi-cavity thin film interference filter.

49. (Canceled)

50. (Canceled).

51. (Currently Amended) The multi-cavity thin-film interference filter of claim 48 further comprising a heater element that is arranged to heat said at least one layer made of said semiconductor material so as to vary in a controllable way the filter characteristics of the optical filter.

Claims 52-59 (Canceled)

60. (Previously Presented) The multi-cavity thin film interference filter of claim 48, wherein the dielectric material is silicon nitride.

61. (Canceled)

62. (Currently Amended) The multi-cavity thin film interference filter of claim 48 ~~61~~, further comprising a substrate on which the first multi-layer thin film interference structure of the first Fabry-Perot cavity structure is deposited, wherein said layer of ~~thermally~~ electrically conductive material forms a ring heater on the substrate and circumscribing an optical path through the first and second Fabry-Perot cavity structures, wherein during use the power that is supplied to the ring heater is electrical power.

63. (Currently Amended) The multi-cavity thin film interference filter of claim 48 ~~61~~, further comprising a crystalline semiconductor substrate on which the first multi-layer thin film interference structure of the first Fabry-Perot cavity structure is deposited, wherein said layer of ~~thermally~~ electrically conductive material is a doped upper region of said substrate, wherein during use the power that is supplied to the doped upper region is electrical power.

64. (Currently Amended) The multi-cavity thin film interference filter of claim 48 ~~61~~, further comprising a substrate and a heater film formed in the substrate, wherein the first multi-layer thin film interference structure of the first Fabry-Perot cavity structure is deposited on the heater film, wherein said layer of ~~thermally~~ electrically conductive material is said heater film and wherein during use the power that is supplied to the heater film of is electrical power.

65. (Currently Amended) The multi-cavity thin film interference filter of claim 48 ~~61~~, wherein said layer of ~~thermally~~ electrically conductive material is one of the layers of the multi-cavity thin film interference filter.

66. (Withdrawn) A method of fabricating a multi-cavity thin film interference filter comprising depositing a sequence of alternating layers of amorphous silicon and a dielectric material deposited one on top of the other to form a tunable bandpass filter, said sequence of alternating layers forming coupled Fabry-Perot cavity structures including at least a first Fabry-Perot cavity structure and a second Fabry-Perot cavity structure, each of said first and second Fabry-Perot cavity structures including a first multi-layer thin film interference structure forming a first mirror; a thin-film spacer layer deposited on a top surface of the first multi-layer thin-film interference structure, said thin-film spacer layer made of said amorphous silicon; and a second multi-layer thin film interference structure deposited on a top surface of the thin-film spacer layer and forming a second mirror.

67. (Withdrawn) The method of claim 66 wherein depositing the sequence of alternating layers involves using only PECVD to deposit the sequence of alternating layers.